

APPARATUS AND METHODS FOR INTEGRALLY PACKAGING
OPTOELECTRONIC DEVICES, IC CHIPS AND
OPTICAL TRANSMISSION LINES

Abstract of the Disclosure

5 Apparatus and methods for packaging optical
communication devices include optical bench structures, such
as silicon-optical benches (SiOB). An optical
communications apparatus includes an optical bench
comprising a substrate having an electrical turning via
10 formed therein. An optoelectronic (OE) chip and integrated
circuit (IC) chip are mounted on the optical bench and
electrically connected using the electrical turning via.
The electrical turning via extends in directions both
perpendicular and transverse to a surface of the substrate
15 such that the OE chip and IC chip can be mounted on
perpendicular surfaces of the optical bench in close
proximity and electrically connected using the electrical
turning via. More specifically, the OE chip and IC chip are
mounted on the optical bench such that a light-emitting or
20 light-detecting surface of the OE chip is substantially
perpendicular to a surface of the IC chip having contacts,
and such that optical transmission lines that are mounted
parallel to the substrate surface can be directly coupled to
the OE chip.